

ETHNOMEDICINAL USES OF TREES BY TRIBALS OF MUNCHANGIPUTTU MANDALAM, VISAKHAPATNAM DISTRICT, ANDHRA PRADESH, INDIA

¹S. B. Padal, ²K. Sathyavathi & ³P. Chandrasekhar

¹Department of Botany, Mrs. A. V. N. College, Visakhapatnam – 530001, Andhra Pradesh, India.

^{2 & 3}Department of Botany, Dr. V. S. Krishna Govt. Degree College, Visakhapatnam, Andhra Pradesh, India

*Corresponding Author Email: sbpadal08@gmail.com

ABSTRACT

Ethno botanical studies were carried out to collect information on the use of Medicinal tree species by the tribal people of Munchangiputtu Mandalam, who live in forests of interial hills in Visakha patnam district, Andhra Pradesh, India. Ethnomedicinal uses of 69 tree species along with local name, botanical name, family, part used, ailments for which the drug is administrated, mode of administration are presented. They belong to 57 genera and 33 angiosperms families. These plants use to cure different type of ailments. Most remedies were taken orally, accounting for 60% of medicinal use. The most widely sought after plant parts in the preparation of remedies in the areas are the stem bark and leaves. Tribal people have high number of medicinal plant species for the treatment of different type of diseases.

KEY WORDS

Ethno-medico botanical, tree plants, tribal people, ailments, munchangiput Mandalam, Visakhapatnam district.

1. INTRODUCTION

The early men revealed the importance of some roots (Carrot, beet, radish, turnip, sweet potato, cassava, roots etc.); Some stems (Potato, asparagus, zinger, turmeric, yams, taro, corms, onion and garlic bulbs etc.); Some flowers and several of the fruits and seeds that had 'edible value' and provided nutrition to the human body for maintaining good health. At the same time it were these early men who also discovered the healing properties of some of those plant food products and of several plant roots such as those of snake-root plant (*Rauvolfia serpentina*) asparagus roots (*Asparagus racemosa* and *A. officinalis*), stems and leaves, fruits and flowers and revealed to the modern men about their utility as medicine for combating one or other diseases and ailments. Although several of those wild food and medicinal plants used by early man have been domesticated today by the modern civilization and has become a parts of our culture, the agriculture, yet a number of them and their relatives still grow in the wild and are

conserved and protected by the indigenous and ethnic societies (tribals in India) and traditional people all over the world. These indigenous societies are the descendents of the primitive human societies and the early men. Hence a considerable part of the knowledge of early men about utility of plants and people-plant relationships have continued down to modern day and are survived by and among the ethnic societies through folklore and through faith and folk traditions. Krishnamurthy (1958) published a paper on the tribal people of Rampa and Gudem agency of Godavari lower Division, East Godavari district. Banerjee (1977) & Gupta *et al.* (1997) has reported the ethnobotany of Araku valley in Visakhapatnam district. T.A. Reddy (1980) note down some medicinal plants of Polavaram Agency, West Godavari district. Nisteswar & Kumar (1980, 1983) reported the phytomedicine from Rampa and Addateegala Agency, East Godavari district. Rao & Harasreeramulu (1985) described the selected medicinal plants of Srikakulam district. Sudhakar &

Rao (1985) enlisted the medicinal plants of East Godavari while Arunee Kumar *et al.* (1990) enumerated the medicinal plants of Kakinada.

2. STUDY AREA

Munching puttu is a village and Mandalam it lies in between geographical coordinates are $18^{\circ}08'508''$ North, $82^{\circ}08'1968''$ East. Munching puttu is the most Northern mandal and bordered by Pedabayalu Mandalam of Visakhapatnam district and Orissa state. District has two divisions the hilly division (Agency area) and plain division. Present study area surrounding villages of Munching putt Mandalam, Babusala, Bangarumetta, Barada, Bungaputtu, Busiputtu, Darel, Doddiputtu, Jarjula, Jerrala, Jolaputtu, Karimukuputtu, Kilagada, Kinchaiputtu, Kumada, Laxmipuram and Makavaram.

3. MATERIAL AND METHODS

Ethno-medico botanical data were collected through conversation with traditional healers, tribal doctors and old women in the field trips. During the interview local names, useful plant parts, method of preparation, and dosage were recorded. The plant species were identified with the help of regional and local floras (Hooker, 1897; Gamble, 1967; Narayana Rao *et al.*, 1981, Rangacharyulu, 1991; Thammanna *et al.*, 1994 and Matthew, 1983). The method of collection of voucher specimens, their preservation herbaria and technique for the collection of ethnomedicobotanical information follows Jain and Rao (1977).

Table 1: Ethnomedicinal tree species used by tribal people of Munchangiputtu Mandalam.

S.No	Botanical name	Family	Vernacular name	Mode of administration
1.	<i>Acacia leucophloea</i> (Roxb.) Willd.	Mimosaceae	Tella tumma	WOUNDS: Stem bark paste mixed with a pinch of turmeric is applied on the affected areas twice a day for 2 days.
2.	<i>Acacia mangia</i> Willd.	Mimosaceae	Acash	PARALYSIS: Stem bark is crushed and eaten with mutton curry.
3.	<i>Acacia nilotica</i> (Linn.) Willd.	Mimosaceae	Nalla thumma	DYSENTERY: Few tender leaves and little bark are boiled and the decoction is taken twice a day.
4.	<i>Ailanthus excelsa</i> Roxb.	Simaroubaceae	Pedda maanu	MENORRHAGIA: Stem bark is crushed and soaked in the fresh liquor for 2 days. One glass of filtrate is administered once a day for three days.
5.	<i>Alangium salvifolium</i> (Linn. f.) Wang.	Alangiaceae	Ooduga chettu	DIABETES: Flower buds mixed with <i>Phyllanthus emblica</i> fruit and turmeric in equal quantities are made into powder. One spoon of it mixed with honey is administered once a day.
6.	<i>Albizia lebbek</i> (Linn.) Willd.	Mimosaceae	Dirisena	MIGRAIN: Two to three drops of root or seed juice is poured into the nostrils and inhaled.
7.	<i>Alstonia scholaris</i> (Linn.) R. Br.	Apocynaceae	Edakulapala	GALACTAGOGUE: Half cup of stem bark decoction is administered orally.
8.	<i>Alstonia venenata</i> R. Br.	Apocynaceae	Pala mandhu chettu	GALACTAGOGUE: Half glass of stem bark decoction is administered orally to increase lactation.

S.No	Botanical name	Family	Vernacular name	Mode of administration
9.	<i>Anacardium occidentale</i> Linn.	Annonaceae	Jeedi mamidi	STOMACHACHE: Stem bark is ground with that of <i>Oroxylum indicum</i> in equal quantities. One spoon of paste is administered with a glass of lukewarm water twice a day for 3 days.
10.	<i>Annona reticulata</i> Linn.	Annonaceae	Ramaphalam	BOILS: Leaf paste is applied on the affected areas once a day till cure.
11.	<i>Anthocephalus cadamba</i> Miq.	Rubiaceae	Kadamba	BLOOD DYSENTERY: Stem bark with equal quantities of dried ginger is boiled into decoction. Half glass of it is administered for three nights.
12.	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Vepa	JAUNDICE: Half cup of stem bark decoction is mixed with one spoon of honey and administered daily in the morning on empty stomach.
13.	<i>Barringtonia acutangula</i> (Linn.) Gaertn.	Barringtoniaceae	Kumbichettu	COUGH: Nuts are fried and made into powder by adding salt and seeds of <i>Cuminum copticum</i> . Four g of it is administered twice a day.
14.	<i>Bauhinia purpurea</i> Linn.	Caesalpiniaceae	Goddu koora	PILES: One spoon of root paste mixed with a glass of butter milk is given orally.
15.	<i>Bauhinia racemosa</i> Lam.	Caesalpiniaceae	Chinna aare	STOMACHACHE: Ten to twenty ml of stem bark juice is taken only once.
16.	<i>Bixa orellana</i> Linn.	Bixaceae	Jaffra	FEVER: A spoon of root extract is administered daily twice for 2 days.
17.	<i>Bombax ceiba</i> Linn.	Bombacaceae	Buruga	BOILS: Root paste of young plant is applied on the boils twice a day for 2 days.
18.	<i>Boswellia serrata</i> Roxb. ex Colebr.	Burseraceae	Anduga	DIARRHOEA: A spoonful of stem bark paste mixed with 2 or 3 spoons of lukewarm water is administered to infants daily twice till cure.
19.	<i>Bridelia montana</i> (Roxb.) Willd.	Euphorbiaceae	Sankumanu	ANTHELMINTIC: Root bark is ground with dried ginger (2:1). A spoonful of paste is administered daily twice for 3 days.
20.	<i>Bridelia retusa</i> (Linn.) Spreng.	Euphorbiaceae	Mulla maddi	JOINT PAINS & ARTHRITIS: Half glass of stem bark decoction is administered daily once.
21.	<i>Butea monosperma</i> (Lam.) Taub.	Fabaceae	Moduga	DYSPEPSIA: Leaf plates made up of leaves of this plant are used for eating meals daily.
22.	<i>Callicarpa arborea</i> Linn.	Verbenaceae	Badiga chettu	ANTHELMINTIC: One spoon of stem bark paste mixed with tuber paste of <i>Rauvolfia serpentina</i> is taken with half cup of water twice a day till cure.

S.No	Botanical name	Family	Vernacular name	Mode of administration
23.	<i>Caryota urens</i> Linn.	Arecaceae	Jiluguchettu	BODY PAINS & REFRIGERANT: Toddy is taken in limited quantity.
24.	<i>Cascabela thevetia</i> (Linn.) Lipp.	Apocynaceae	Paccha ganneru	STOMACHACHE: One spoon of stem bark paste is taken with water.
25.	<i>Cassia fistula</i> Linn.	Caesalpiniaceae	Rela	JAUNDICE: One spoon of fruit pulp is administered with sugarcane juice.
26.	<i>Cipadessa baccifera</i> (Roth) Miq.	Meliaceae	Palladonda	CHIKENPOX: Leaves are ground with turmeric. Paste is applied on the affected areas.
27.	<i>Cochlospermum religiosum</i> (Linn.) Alston	Cochlospermaceae	Adavi gogu	BONE FRACTURE: Stem bark paste is plastered on the affected areas for one month.
28.	<i>Dillenia indica</i> Linn.	Dilleniaceae	Revadachettu	STOMACHACHE: One spoon of stem bark paste is administered with water.
29.	<i>Erythrina variegata</i> Linn.	Fabaceae	Baditha	EARACHE: Four to five drops of leaf juice or stem bark juice is instilled into the affected ears.
30.	<i>Eucalyptus globulus</i> Labill.	Myrtaceae	Neelagiri chettu	LEG SWELLINGS: Leaves are presoaked in the hot water and legs are kept in that water to get relief.
31.	<i>Euphorbia nivulia</i> Buch.-Ham.	Euphorbiaceae	Akujamudu	EARACHE: Leaves are warmed and 2-3 drops of juice is squeezed into the ears.
32.	<i>Ficus benghalensis</i> Linn.	Moraceae	Marri	DIABETES: Quarter glass of stem bark juice is taken daily in the morning.
33.	<i>Ficus hispida</i> Linn. f.	Moraceae	Boddamarri	GONORRHOEA: Quarter cup of root juice mixed with ten g of cumin seed powder is administered daily once.
34.	<i>Ficus microcarpa</i> Linn.f.	Moraceae	Juvvi	BLOOD DYSENTERY: Stem bark is crushed into paste, cooked with cow milk and mixed with honey. One spoon of it is administered daily.
35.	<i>Ficus racemosa</i> Linn.	Moraceae	Medi chettu	DIABETES: Sixty g of stem bark is crushed and boiled in two glasses of water till it reduced to half glass. Filtrate mixed with one spoon of honey is taken orally.
36.	<i>Glycosmis pentaphylla</i> (Retz.) DC.	Rutaceae	Konda gilugu	WOUNDS: Leaf paste is applied on the affected areas twice a day for 2 days.
37.	<i>Gmelina arborea</i> Roxb.	Verbenaceae	Gummudu chettu	GALACTAGOGUE: Root decoction with honey is given once a day for nourishing mothers.
38.	<i>Haldinia cordifolia</i> (Roxb.) Ridsd.	Rubiaceae	Bandari	SKIN DISEASES: Two spoons of stem bark decoction is administered daily to purify the blood.

S.No	Botanical name	Family	Vernacular name	Mode of administration
39.	<i>Lannea coromandelica</i> (Houtt.) Merr.	Anacardiaceae	Gumpena manu	STOMACHACHE: Stem bark with that of <i>Garuga pinnata</i> and <i>Catunaregam spinosa</i> are taken in equal quantities and ground. Two spoons of paste with a glass of water is administered thrice a day.
40.	<i>Madhuca indica</i> Gmel.	Sapotaceae	Ippa	DOG BITE: Fifty g of stem bark is crushed and boiled in 100 ml of water till it is reduced to 30 ml. The filtered decoction is administered for twice on first day and once in the next day.
41.	<i>Mallotus philippensis</i> (Lam.) Muell.	Euphorbiaceae	Sinduri	EYE DISEASES: Seeds powder is pounded with <i>Phyllanthus emblica</i> fruit juice and made into tablets and sun dried. Tablets mixed with water are applied as <i>kaajal</i> daily.
42.	<i>Manilkara hexandra</i> (Roxb.) Dubard.	Sapotaceae	Palachettu	GALACTAGOGUE: Juice of stem bark is given daily once for 3-5 days. It is also given to the lactating mothers daily once for 3-5 days.
43.	<i>Melia azadirach</i> Linn.	Meliaceae	Turaka vepa	DIARRHOEA: One to two spoons of leaf paste mixed with butter milk is taken orally daily for 3 to 5 times.
44.	<i>Mimusops elengi</i> Linn.	Sapotaceae	Pogada	HEADACHE: Shade dried flowers are filtered through fine cloth and stored. A pinch of it is inhaled or flowers are smelled often.
45.	<i>Moringa oleifera</i> Lam.	Moringaceae	Munaga	GALACTAGOGUE: Leaf juice is taken with honey or leaves are cooked and eaten as curry, after delivery once a day for 5 days to increase lactation.
46.	<i>Morinda pubescens</i> Sm.	Rubiaceae	Togaru	STOMACHACHE: Two spoons of stem bark paste mixed with a spoonful of turmeric is administered twice a day for 2 days.
47.	<i>Murraya koenigii</i> (Linn.) Spreng.	Rutaceae	Karrivepaku	DYSENTERY: One to two spoons of leaf paste mixed with half glass of butter milk is administered for 3-5 times a day.
48.	<i>Nyctanthes arbor-tristis</i> Linn.	Nyctaginaceae	Parijatam	MALARIA: Quarter cup of leaf decoction or one spoon of leaf juice is administered for four times a day.
49.	<i>Oroxylum indicum</i> (Linn.) Vent.	Bignoniaceae	Pampanga	JAUNDICE: Ten g of stem bark is ground with two g of turmeric. One spoon of paste is administered daily twice for five days.

S.No	Botanical name	Family	Vernacular name	Mode of administration
50.	<i>Phyllanthus emblica</i> Linn.	Euphorbiaceae	Usiri chettu	DIABETES: Quarter cup of fruit juice is given orally with a pinch of turmeric paste and honey daily once.
51.	<i>Plumeria alba</i> Linn.	Apocynaceae	Lakshmi poolu	STOMACHACHE: One spoon of stem bark paste is administered with water.
52.	<i>Plumeria rubra</i> Linn.	Apocynaceae	poolu chettu	HEART PAIN: Latex of the stem is poked on the chest daily.
53.	<i>Pongamia pinnata</i> (Linn.) Pierre	Fabaceae	Ganuga,	DIABETES: Three to five g of flower powder mixed with one glass of milk is administered daily once on empty stomach.
54.	<i>Pterocarpus marsupium</i> Roxb.	Fabaceae	Yegisa	DIABETES: Stem bark is dried and powdered. Two spoons of powder with water is taken twice a day for one month.
55.	<i>Sapindus emarginatus</i> Vahl.	Sapindaceae	Kunkudu	EASY DELIVERY: Cotton is dipped in fruit decoction is kept near the vagina at the time of delivery
56.	<i>Saraca asoca</i> (Roxb.) De Willd.	Caesalpiniaceae	Asoka chettu	RHEUMATISM: Stem bark slightly heated is plastered on the affected areas.
57.	<i>Semecarpus anacardium</i> Linn.f.	Anacardiaceae	Nalla jeedi	SCABIES: Two g of stem bark powder is administered on empty stomach in the morning and evening for five days.
58.	<i>Solanum erianthum</i> Don.	Solanaceae	Pittu chettu	CATARACT: Two to three drops of flower juice is dropped into the affected eyes and also one flower is tied to the finger.
59.	<i>Soymida febrifuga</i> (Roxb.) A. Juss.	Meliaceae	: Sami chettu	SCORPION STING: Stem bark paste is applied on the bitten area and 10-20 ml fresh stem bark juice is administered orally.
60.	<i>Sterculia urens</i> Roxb.	Sterculiaceae	Kovila chettu	RHEUMATISM: Five to ten g of gum or 20 g of stem bark is administered with curd.
61.	<i>Strychnos nux-vomica</i> Linn.	Loganiaceae	Mushidi,	SNAKE BITE: One spoon of stem bark juice mixed with half cup of water is administered just after bite.
62.	<i>Strychnos potatorum</i> Linn.f.	Loganiaceae	Induga	DIABETES: Three seeds are soaked and pounded with butter milk. One spoon of it is administered daily in the morning on empty stomach.
63.	<i>Syzygium cumini</i> (Linn.) Skeels	Myrtaceae	Neredu	DYSENTERY: Stem bark with that of <i>Phyllanthus emblica</i> is ground and one spoon of it is administered daily twice for 3 days.
64.	<i>Tamarindus indica</i> Linn.	Caesalpiniaceae	Chintha chettu	JAUNDICE: Quarter cup of tender leaf decoction is given twice a day.

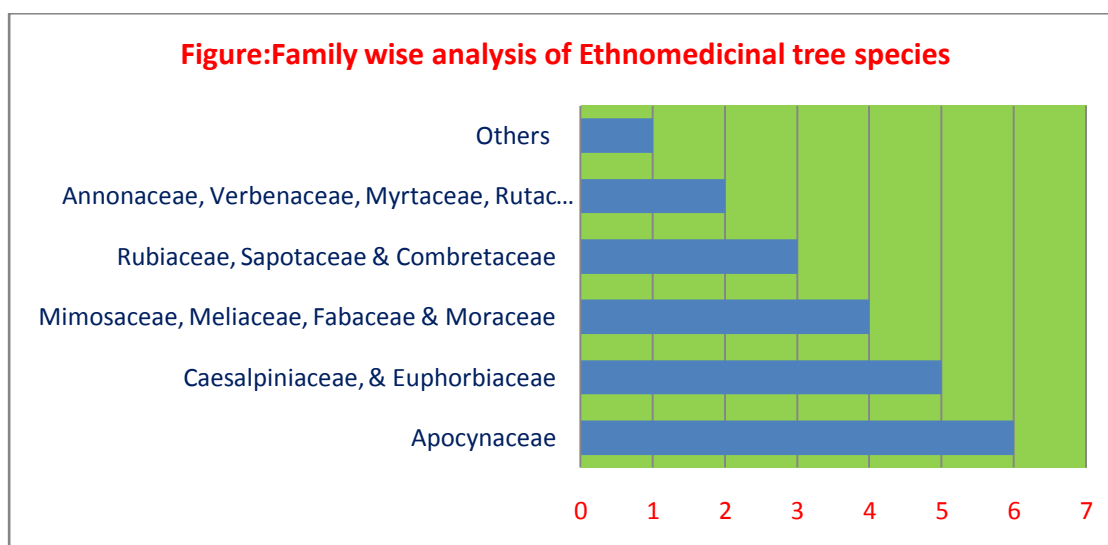
S.No	Botanical name	Family	Vernacular name	Mode of administration
65.	<i>Terminalia alata</i> Roth	Combretaceae	Nallamaddi	JAUNDICE: Stem bark mixed with that of <i>Oroxylum indicum</i> , and whole plant of <i>Phyllanthus amarus</i> are made into decoction. Quarter cup of it is administered daily once on empty stomach.
66.	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	Tani	BLOOD DYSENTERY: One to two spoons of fruit powder mixed with one spoon of sugar candy powder is given orally.
67.	<i>Terminalia chebula</i> Retz.	Combretaceae	Karakkai	COUGH: Epicarp of the fruit is kept in the mouth and gulps the juice.
68.	<i>Wrightia tinctoria</i> (Roxb.) R. Br.	Apocynaceae	Ankudu	LAXATIVE: Half glass of young leaf juice is administered only once.
69.	<i>Zizyphus mauritiana</i> Lam.	Rhamnaceae	Regu	RHEUMATIC PAINS: Half glass of stem bark decoction is administered daily once.

4. RESULTS AND DISCUSSION

Our study provides information based on 69 tree species belong to 57 genera of 33 families, commonly used for varies diseases by the tribal people of Munchangiputtu Mandalam, Visakhapatnam district, Andhra Pradesh, India. Stem bark are the most frequently used plant part followed by leaves, roots, fruits, flowers, seeds, and latex. The common diseases treated using medicinal trees are wounds, paralysis, dysentery, menorrhagea, diabetes, migraine, galactogauge, stomachache, boils, jaundice, cough, piles, diarrhea, Anthelmintic, joint pain, dyspepsia, body pain, chicken pox, bone fracture, earache, leg swellings, gonorrhea, skin disease, dog

bite, eye disease, headache, malaria, heart pain, easy delivery, rheumatism, scorpion sting, snake bite, diabetes and laxative. The detailed information of plant species with their parts used as traditional medicine for varies problems has also been presented in **Table 1**. Out of the 33 Angiospermae families Apocynaceae with 6 species, Caesalpiniaceae and Euphorbiaceae each one have 5 species, Mimosaceae, Meliaceae, Fabaceae and Moraceae with 4 species, Rubiaceae, Sapotaceae and Combretaceae with 3 species, Annonaceae, Verbenaceae, Myrtaceae, Rutaceae and Loganiaceae with 2 species and remaining families each one have single species.

Figure: Family wise analysis of Ethnomedicinal tree species



However, we feel that the indigenous knowledge and practices of the Munchangiputtu Mandalam tribes on utilization of plant resources as medicine should be reported and preserved before they get lost due to increasing integration. In the information obtained, there were many details about the appropriate indication of each plant. This vast array of rare medicinal plants can be used for further research only if we ensure proper conservation of these endangered species. Thus researchers should observe ethnomedical information before deciding which kind of screening should be used in the search of drugs for various diseases which may also be a potential source of modern drug industries.

5. ACKNOWLEDGEMENT

The authors are thankful to the notified and denotified adivasis groups, their vairs, ojhars, bhops etc. and forest officials who provided valuable information on this subject. We are also thankful to the authorities of various herbaria and, museums for their help and co-operation extended in several ways.

5. REFERENCE

- Anuradha, S. Upadhye, V. D. Vartak and M.S. Kumbhojkar. Ethnomedico Botanical studies in Western Maharashtra, India. *Ethnobotany*, 1994. 6: 25-31.
- Arunee Kumar, K., G. Satyanarayana, and K. Niteswar. Medicinal plants of Kakinada, East Godavari District, and Andhra Pradesh. *Indian Medicine*, 1999. 2: 2-4.
- Basi Reddy, M., K. Raja Reddy and M. N. Reddy. *Ethnobotany of Cuddapah district, Andhra Pradesh, India*. *Int. Journ. Pharmacogn*, 1991. 29: 1-8.
- Billore, K. V., T. G. Joseph and S. K. Dave. Interesting folk remedies by the Local vaidyas of Rajasthan for Swas Roga. *Ethnobotany*, 1998. 10: 42-45.
- Chandra, K. and H. C. Pandey. Collection of plants around Agora Dodital in Uttarakashi district of Uttar Pradesh with medicinal values and folk-lore claims. *Int. J. Crude Drug Res.*, 1983. 21: 21-28.
- Das, P. K. and R. Kanth. Ethnobotanical studies of the tribal belt of Koraput (Orissa). *Bull. Medico Ethn. Bot. Res.*, 1988. 9(3-4): 123-128.
- Girach, R. D. and Aminuddin. Ethno medicinal uses of plants among the tribals of Singbhum District, Bihar, India. *Ethnobotany*, 1995. 7: 103 - 107.
- Hema, L & N. Yesodamma. Importance of Medicinal Plants of Ardhagiri hill, Chittoor district, Andhra Pradesh. *International Seminar on Medicinal Plants and Herbal products*, 2008. 7th-9th March. Page. 45.
- Jain, S. K. Studies on Indian Ethnobotany - Less known uses of 50 common plants from tribal areas of Madhya Pradesh. *Bull. Bot. Surv. India*, 1963. 5(3-4): 223-226.
- Katewa, S. S., Ambika Nag and Buddhadev Guria. Ethnobotanical studies on wild plants for food from the Aravalli hills of South - east Rajasthan. *J. Econ. Tax Bot.*, 1999. 23: 259-264.
- Kumar, A. K. and K. Niteswar. An enquiry into the folk lore medicines of Addateegala an agency tract of East Godavari District of Andhra Pradesh. *Indian Medicine*, 1983. 2: 2-4.
- Madhavachetty, K. M. Lakshmipathi Chetty, A. Sudhakar and C. Ramesh. Ethnomedico botany of some aquatic angiospermae in Chittoor district of Andhra Pradesh. *Fitoterapia*, 1998. 69:7.
- Gamble J.S. and C.E.S. Fischer. *Flora of the Presidency of Madras*, 1967. Vol. 1-3, Calcutta.
- Hooker, J.D. *The flora of British India*, 1897. Vol. 1-7, Reeve, L. Co. Ltd. Ashford, Kent, London.
- Jain, S.K. and R.R.Rao. *Field and Herbarium methods*. Today and Tomorrow publishers, 1977. New Delhi.
- Narayana Rao, K., P. Thammanna and K.S.K. Das. *Plant Wealth of Tirumala T.T.D. Press*, 1981. Tirupathi.
- Matthew, K.M. *The flora of Tamil Nadu Karnatic*, 1983. Vol. 1-3. The Rapinat Herbarium St. Joseph's College, Tiruchurapalli, India.
- Rangacharyulu, D. *Floristic Studies of Chittoor district*, Ph.D. Thesis, 1991. S. V. University and Tirupathi.
- Sudarsanam, G. *Ethnobotanical survey and phytopharmaco-chemical screening of selected medicinal plants of chittoor district*, A.P, 1987. S.V. University, Tirupathi.
- Thammanna, P., K. Narayana Rao and K. Madhavachetty. *Angiospermic wealth of Tirupathi*, T.T.D. Press, 1994. Tirupathi.



***Corresponding Author:**

S. B. Padal*
Department of Botany,
Mrs. A. V. N. College,
Visakhapatnam – 530001,
Andhra Pradesh, India.

© 2013; **JP RESEARCH Publishers**

This is an Open Access article distributed under the terms of the Creative Commons Attribution License which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.—IJPBS--